

## CLAIMS

1. A connector device for a circuit board comprising:  
a circuit board with at least one opening adapted to receive a bayonet;  
at least one electrically conducting bayonet mounted on the circuit board through said at least one opening;  
a plurality of vias surrounding said at least one opening solder passing through said vias and extending to both sides of said circuit board and to said at least one bayonet.
2. The device of claim 1, wherein a gap is defined between an outer wall of said bayonet and a wall of said at least one opening and further comprising solder passing through said gap and extending to both sides of said circuit board.
3. The device of claim 1, further comprising a second bayonet mounted on said circuit board electrically connected to the other bayonet by an electrical connection.
4. The device of claim 1, wherein the circuit board comprises a multi-layer printed circuit board.
5. The device of claim 4, wherein the circuit board is no less than 0.100 inches thick.
6. The device of claim 1, wherein said at least one opening is thru-hole plated.
7. The device of claim 6, wherein said thru-hole plating comprises copper plating.
8. The device of claim 1, wherein said vias are thru-hole plated.

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9. The device of claim 8 , wherein said thru-hole plating comprises copper plating.

10. The device of claim 1, comprising a plurality of pairs of electrically conducting bayonets wherein the bayonets in at least some of said pairs are electrically connected by an electrical connection.

11. The device of claim 3, wherein said circuit board comprises a multi-layer circuit board and the electrical connection comprises an electrical trace embedded between at least two layers of said multi-layer printed circuit board.

12. The device of claim 10, wherein said circuit board comprises a multi-layer printed circuit board and wherein a plurality of electrical connections which conduct an electric current between the pairs of electrically conducting bayonets are embedded between multiple layers of the multi-layer printed circuit board.

13. A method of attaching a current or voltage bayonet to a circuit board, comprising:

providing a circuit board with at least one opening adapted to receive a bayonet;

forming a plurality of vias around said at least one opening;

placing an electrically conducting bayonet in said at least one opening; and

applying solder on one surface of the circuit board, through the vias to the opposite surface of the circuit board and extending to said bayonet.

14. The method of claim 13, wherein the circuit board comprises a multi-layer printed circuit board.

15. The method of claim 13, further comprising the step of forming a solder pad around said opening and wherein the vias are formed through said solder pad.

16. The method of claim 13, comprising the steps of attaching a second electrically conducting bayonet on said circuit board and electrically connecting the two bayonets.

17. The method of claim 13, further comprising the step of thru-hole plating said plurality of vias.

18. The method of claim 16, wherein said circuit board comprises a multi-layer circuit board and said step of electrically connecting said two bayonets comprises embedding the electrical trace between the layers of said multi-layer circuit board.

19. The method of claim 13, wherein a gap is defined between said bayonet and said at least one opening and further comprising the step of applying solder around said bayonet and through said gap.

20. The method of Claim 19, further comprising the step of thru-hole plating said at least one opening.

21. In an electrical meter for sensing electrical parameters from an electric circuit, said meter including bayonets disposed on said meter, said bayonets mateable with matching jaws of a detachable meter mounting device, said bayonets used to receive voltage and current signals from the electric circuit to the meter, and one or more sensors coupled with said electric circuit and operative to sense one or more electrical parameters in said electric circuit and generate one or more analog signals indicative of said electrical parameters, said meter comprising:

a circuit board with a plurality of openings each adapted to receive a bayonet;

a plurality of electrically conducting bayonets mounted on the circuit board through said openings to define as at least one of a voltage and a current bayonet, wherein a gap is defined between said openings and said bayonets;

solder passing through said gap and extending to both sides of said circuit board; and

an electrical sensor connected to at least one of said bayonets.

22. The meter of claim 21 further comprising a plurality of vias disposed around at least one of said plurality of openings and solder passing through said vias and extending to both sides of said circuit board and extending to the bayonet in said at least one opening.

23. The meter of claim 22 further comprising a solder pad on one at least side of said circuit board and wherein said vias pass through said solder pad.

24. The meter of claim 21, further comprising an electrical connection between at least two of said bayonets.

25. The meter of claim 21, wherein the circuit board comprises a multi-layer printed circuit board.

26. The meter of claim 25, wherein the circuit board is no less than 0.100 inches thick.

27. The meter of claim 21, wherein at least two of the bayonets are electrically connected by an electrical connection.

28. The meter of claim 27, wherein said circuit board comprises a multi-layer circuit board and the electrical connection comprises an electrical trace embedded between at least two layers of said multi-layer printed circuit board.

29. The meter of claim 28, wherein a plurality of electrical connections which conduct an electric current between the pair of electrically conducting bayonets are embedded between multiple layers of the multi-layer printed circuit board.

30. A connector device for a circuit board comprising,

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a circuit board with at least one opening adapted to receive a bayonet;

at least one electrically conducting bayonet mounted on the circuit board through said at least one opening, wherein a gap is defined between said at least one opening and said bayonet;

a plurality of vias surrounding said opening;

solder passing through said vias and extending to both sides of said circuit board through said vias and passing through said gap and extending to both sides of said circuit board through said gap and said solder extending to said bayonet.

31. The device of claim 30, further comprising a second bayonet mounted on said circuit board electrically connected to the other bayonet by an electrical connection.

32. The device of claim 30, wherein the circuit board comprises a multi-layer printed circuit board.

33. The device of claim 32, wherein the circuit board is no less than 0.100 inches thick.

34. The device of claim 30, wherein said at least one opening and said vias are thru-hole plated.

35. The device of claim 30, comprising a plurality of pairs of electrically conducting bayonets wherein the bayonets in at least some of said pairs are electrically connected by an electrical connection.

36. The device of claim 35, wherein said circuit board comprises a multi-layer circuit board and the electrical connection comprises an electrical trace embedded between at least two layers of the multi-layer printed circuit board.

37. The device of claim 35, wherein said circuit board comprises a multi-layer printed circuit board and wherein a plurality of electrical

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connections which conduct an electric current between the pairs of electrically conducting bayonets are embedded between multiple layers of said multi-layer printed circuit board.

38. The device of claim 30 further comprising a solder pad formed on at least one side of said circuit board around said at least one opening, wherein said vias pass through said solder pad.

39. In an electrical meter for sensing electrical parameters from an electric circuit, said meter including bayonet terminals disposed on said meter mateable with matching jaws of a detachable meter mounting device, said bayonet terminals used to receive signals from the electric circuit to the meter, and one or more sensors coupled with said electric circuit and operative to sense one or more electrical parameters in said electric circuit and generate one or more analog signals indicative of said electrical parameters, said meter comprising:

a circuit board with at least one opening adapted to receive a bayonet;

at least one electrically conducting bayonet mounted on the circuit board through said at least one opening, wherein a gap is defined between said at least one opening and said bayonet;

a plurality of vias formed around said opening; solder passing through said vias and extending to both sides of said circuit board through said vias and passing through said gap and extending to both sides of said circuit board through said gap and said solder extending to said bayonet; and

an electrical sensor connected to said at least one electrically conducting bayonet.

40. The meter of claim 39, further comprising a second bayonet mounted on said circuit board electrically connected to the other bayonet by an electrical connection.

41. The meter of claim 39, wherein the circuit board comprises a multi-layer printed circuit board.

42. The meter of claim 41, wherein the circuit board is no less than 0.100 inches thick.

5 43. The meter of claim 39, comprising a plurality of pairs of electrically conducting bayonets wherein the bayonets in at least some of said pairs are electrically connected by an electrical connection.

44. The device of claim 40, wherein said circuit board comprises a multi-layer circuit board and said electrical connection comprises an electrical trace embedded between at least two layers of said multi-layer printed circuit board.

45. The device of claim 43, wherein said circuit board comprises a multi-layer printed circuit board and wherein a plurality of electrical connections which conduct an electric current between the pair of electrically conducting bayonets are embedded between multiple layers of said multi-layer printed circuit board.

46. The device of claim 39, further comprising a solder pad formed on at least one side of said circuit board around said at least one opening and wherein said vias pass through said solder pad.

20 47. The device of claim 39, wherein said at least one opening is thru-hole plated.

48. The device of claim 39, wherein said vias are thru-hole plated.